

SUPPORT FOR THE AMENDMENTS

Claim 11 was previously canceled.

Claim 10 has been amended.

Claim 14-25 has been added.

The amendment of Claim 10 and the addition of new Claim 14-25 is supported by the original claims and by the specification at, for example, in the Examples.

No new matter has been added by the present amendments.

REMARKS

Claims 1-10 and 12-25 are pending in the present application.

The rejections of:

- (a) Claims 1-6 and 9-13 under 35 U.S.C. §103(a) over Farrissey et al in view of Joern et al; and
- (b) Claims 1-10, 12, and 13 under 35 U.S.C. §103(a) over Kohlstruck et al in view of Joern et al,

are respectfully traversed.

In the Office Action, the Examiner openly recognizes that neither Farrissey et al nor Kohlstruck et al disclose or suggest “the presence of at least one trimerization catalyst selected from the group consisting essentially of the ammonium salts, substituted by four hydrocarbon radicals, of α -hydroxy-carboxylates” according to Claim 1 of the present invention. However, the Examiner contends that Joern compensates for this deficiency by disclosing an alleged equivalence between α -hydroxy-carboxylates and non- α -hydroxy-carboxylates (e.g., acetic acid which is disclosed by Farrissey et al and Kohlstruck et al) as trimerization catalysts. As such, the Examiner alleges that it would have been obvious to replace the trimerization catalysts used in Farrissey et al and Kohlstruck et al with an α -hydroxy-carboxylate to provide “a process for preparing isocyanurate-containing polyisocyanates by at least partly trimerizing (cyclo)aliphatic diisocyanates, which comprises carrying out the reaction in the presence of at least one trimerization catalyst selected from the group consisting essentially of the ammonium salts, substituted by four hydrocarbon radicals, of α -hydroxy-carboxylates.”

Applicants disagree, but nonetheless submit “Evidence of unobvious or unexpected advantageous properties, such as superiority in a property the claimed compound shares with the prior art, can rebut *prima facie* obviousness. “Evidence that a compound is unexpectedly superior in one of a spectrum of common properties . . . can be enough to rebut a *prima facie* case of obviousness.” No set number of examples of superiority is required. *In re Chupp*, 816 F.2d 643, 646, 2 USPQ2d 1437, 1439 (Fed. Cir. 1987)” Thus, the data in the specification clearly illustrates that inclusion of an α -hydroxy carboxylate provides for significant differences in the NCO values and the color number of the product obtained, which are enough to rebut a *prima facie* case of obviousness.

Specifically, Applicants direct the Examiner’s attention to the Examples of the present application, which clearly demonstrate that the α -hydroxyl carboxylic acids give rise to polyisocyanates with a lower color number. Specific reference is made to the following comparisons:

Example 1 (color number of 30 Hz) vs. Comparative Example 1 (color number of 53 Hz)

Example 4 (color number of 17 Hz) vs. Comparative Example 2 (color number of 61 Hz)

Example 5 (color number of 180 Hz) vs. Comparative Example 3 (color number of 800 Hz)

Applicants submit that the results demonstrated in these comparisons clearly illustrate that, even if a *prima facie* case of obviousness can be established, Applicants demonstration is sufficient to rebut the same.

To further explain the relevance and importance of the foregoing comparison based on the data in the specification, Applicants submit the following additional remarks together with the following table specifically reporting the data from the examples of the present application.

	Catalyst	NCO-Value [%}	Color Number [Hz]
Halogen-free hexamethylene diisocyanate (HDI)			
Comp. Ex. 1	N-(2-hydroxypropyl)-N,N,N-trimethylammonium 2-ethylhexanoate	20.9	53
Ex. 1	carboxylate of tetramethylammonium hydroxide with 2-hydroxypropionic acid	19.0	30
Ex. 2	carboxylate of tetramethylammonium hydroxide with 2-ethyl-2-hydroxybutyric acid	21.2	21
Ex. 3	carboxylate of tetramethylammonium hydroxide with 2-hydroxyisocaproic acid	20.7	30
HDI from phosgene process			
Ex. 4	carboxylate of tetramethylammonium hydroxide with 2-ethyl-2-hydroxybutyric acid	21.2	17
Comp. Ex. 2	N-(2-hydroxypropyl)-N,N,N-trimethylammonium 2-ethylhexanoate	21.5	61
Isophorone Diisocyanate			
Comp. Ex. 3	N-(2-hydroxypropyl)-N,N,N-trimethylammonium 2-ethylhexanoate	17.2	800
Ex. 5	carboxylate of tetramethylammonium hydroxide with 2-ethyl-2-hydroxybutyric acid	17.1	180
Ex. 6	carboxylate of tetramethylammonium hydroxide with 2-hydroxypropionic acid	17.3	92

These data show that the color number is not affected by the NCO-value, see for example Examples 2 and 3 with higher and lower NCO-values than Comparative Example 1. The same is true for Examples 5 and 6 as compared to Comparative Example 3. The small differences in the NCO-values do not explain the differences in color number. In other

words, the reason for the differences in the color number is not the NCO-value but the catalyst used in the examples.

Further, it is very difficult to exactly reproduce the NCO-values from one example to the other. As is evident the monomeric isocyanate is reacted in the presence of a catalyst to a certain NCO-value, depending on the yield, to obtain a reaction mixture comprising unreacted monomeric isocyanate and the reaction product. Accordingly, from the NCO-value of the reaction mixture the NCO-value of the product cannot necessarily be predicted.

Afterwards, the monomeric isocyanate is essentially distilled off, however, varying small amounts of the monomeric isocyanate remain in the product depending on the exact distillation conditions. This explains why the NCO-value can hardly be met even if you reproduce an example literally.

Looking at the comparison of comparative examples 1 and 2 to Examples 2 and 4, it can be seen that comparative examples 1 and 2 use the same catalyst by HDI of different origin. Using a chlorine-containing HDI instead of a chlorine-free HDI yields a product which is slightly more colored. In contrast, using a catalyst according to the present invention and changing the isocyanate in the same way leads to a slightly less colored product of Example 4 compared to Example 2. This means that the catalysts according to the present invention are even more preferred in a process reacting a chlorine-containing HDI.

Looking at the disclosure of Joern et al, at paragraph [0027], lactic acid is known to act a blowing agent. However, in the manufacturing of polyisocyanates such a feature is not an advantage, but a disadvantage. Specifically, since the pure polyisocyanates are to be obtained rather than foams, the blowing agent feature is disadvantageous. Thus, based upon the disclosure of Joern et al the skilled artisan would not take into account lactic acid as part of a catalyst.

Looking at Kohlstruk et al, catalysts bearing a hydroxyl group are compared with catalysts not bearing a hydroxyl group. However, the hydroxyl group is part of the ammonium cation and not of the counterion, as in the present invention.

According to Kohlstruk et al, a catalyst bearing a hydroxyl group in the ammonium moiety (N-(2-hydroxypropyl)-N,N,N-trimethylammonium 2-ethylhexanoate (C-cat. 1), col. 9, lines 6-25) yield a product with a much higher color number than a catalyst with the same anion but not bearing a hydroxyl group (N,N-dimethyl-N-ethyl-N-(4-methoxybenzyl)ammonium 2-ethylhexanoate (cat. 4), col. 8, lines 43 et seq. and col. 9, lines 37-38). Accordingly, based on the disclosure of Kohlstruk et al, the skilled artisan would be led to the conclusion that adding hydroxyl groups to a catalyst is detrimental with respect to color number.

In view of the foregoing, Applicants submit that the obviousness rejections are not sustainable and withdrawal of these grounds of rejection is requested.

Applicants submit that the present application is now in condition for allowance.
Early notification of such action is earnestly solicited.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
Norman F. Oblon



Vincent K. Shier, Ph.D.
Registration No. 50,552

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413-2220
(OSMMN 08/03)